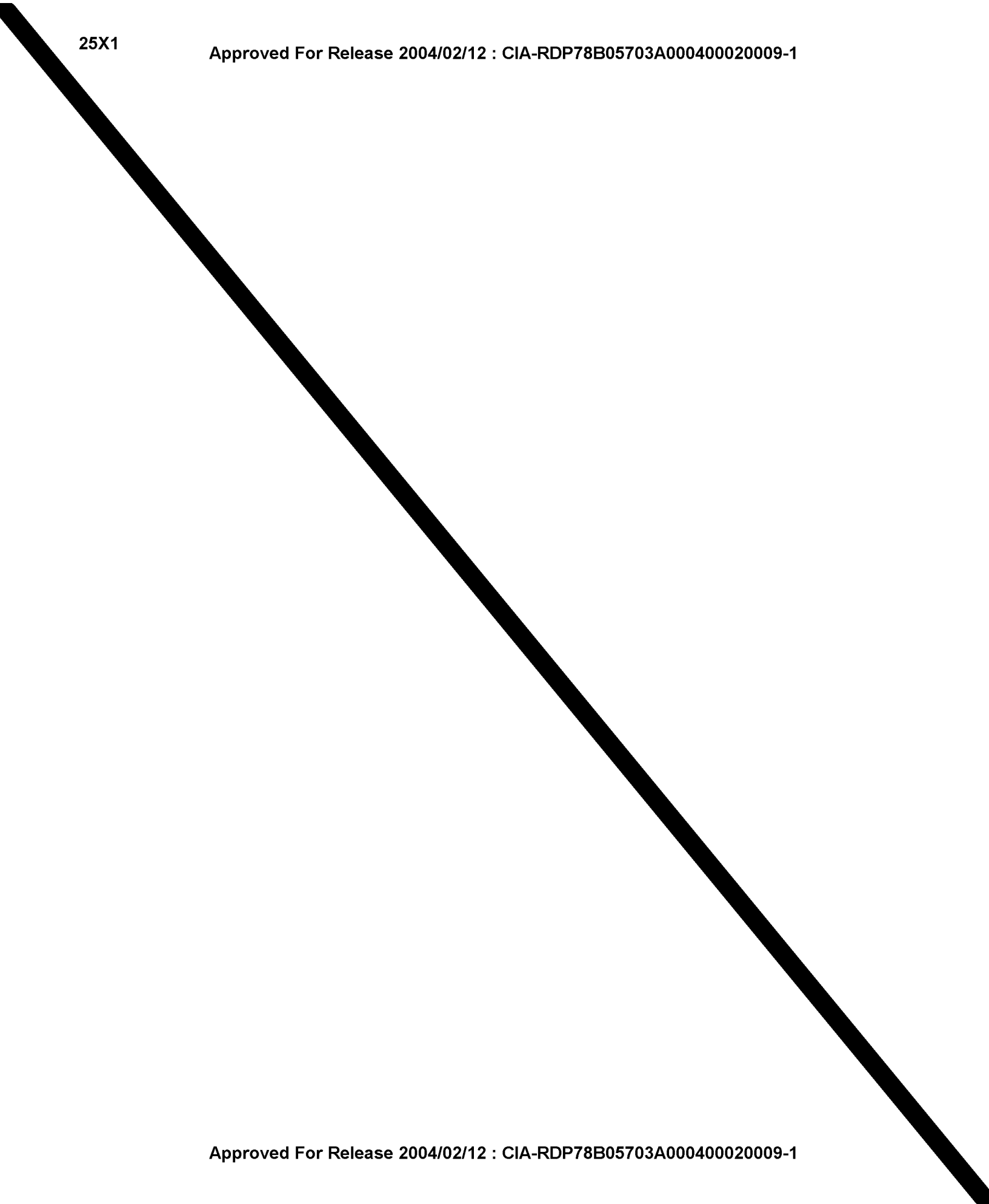

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IAS INSTRUCTION NO. 51-6

INTELLIGENCE ACTIVITIES
October 1970

SUBJECT: Mensuration Policy of the Imagery Analysis Service

RECISSION: IAS Instruction No. 51-1, dated June 1968 [redacted] 25X1

The attached document has been prepared by an IAS working group and approved by the IAS Production Board after consultation with NPIC/IEG/PHD. It contains instructions designed to maintain high standards in the mensuration performed by the Service. It will be distributed to all IAS imagery analysts and supervisors for their study and retention.

[redacted] 25X1

Director
Imagery Analysis Service

Distribution:
All IAS Employees

MENSURATION POLICY OF THE IMAGERY ANALYSIS SERVICE

INTRODUCTION

IAS maintains an internal capability to derive mensural data from overhead photography in order to insure timely response to CIA requests for mensuration as well as to support the imagery analysis process. This requires the availability of various in-house measuring devices, some of which operate on-line to NPIC's Univac 494 computer. Selection of the appropriate equipment and techniques to be employed on a particular mensuration task depends primarily on the requirement, the target, and the imagery available. For certain specialized mensuration tasks, particularly those requiring photogrammetric expertise, IAS relies on the services of the Photogrammetry Division/IEG/NPIC.

IAS MENSURATION PROCEDURES

When extremely important measurements are to be made the following procedures apply:

1. Consult the Analysis Branch/PHD/IEG to determine if image motion compensation (IMC) errors or other anomalies are known to exist in the imagery to be measured.

2. Use on-line mensuration devices unless the imagery covers appropriately oriented buildings constructed by the Unified Modular System (UMS). In the latter case filar measuring eyepieces may be employed for mensuration utilizing UMS derived scale factors. (See IAR-93011, A Method for Obtaining Highly Accurate Measurements from Photography of Soviet Buildings, dated May 1969.)

3. Measure on the best available film positives.

4. Average the measurements made at least three times each by two or more experienced imagery analysts.

5. Whenever possible, these additional steps are to be taken:

   a. View the imagery in stereo.

b. Measure targets of known dimensions as an aid in detecting significant ephemeral errors and/or equipment malfunctions.

c. Use imagery from two or more missions or, if not available, use two or more passes from the same mission.

d. Compare IAS measurements with those previously made by PHD/IEG and considered by them to be reliable.

If the nature of the project does not warrant, or the imagery does not permit, application of the procedures described above, employ the mensuration equipment and techniques which are most suitable to the imagery, the technical data, and the scaling objects available.

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REPORTING IAS MEASUREMENTS

ACCURACY STATEMENTS

As no comprehensive statistical analysis of the accuracy of IAS mensuration equipment and techniques has been performed, accuracy statements cannot be provided for IAS produced measurements. Therefore, measurements for which accuracy statements are required must be derived by PHD/IEG.

SPECIALIZED MENSURATION REQUIRING NPIC SUPPORT

The types of mensuration for which IAS requires the photogrammetric services of PHD/IEG will normally fall into one of the following categories:

1. Mensuration from ground photography.

2. Specialized height, depth, and contour problems.

3. Certain critical measurements from non-satellite imagery.

4. Determination of precise azimuths or geographic coordinates.

5. Mensuration requiring the production of topographic maps or orthographic projections.

6. Measurements requiring an accuracy statement.

7. Other photogrammetric functions, usually unique in nature.

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SUPERVISORY RESPONSIBILITIES

IAS Branch Chiefs are responsible for:

1. Recommending whether a mensuration request should be accomplished in IAS or sent to PHD/IEG.

2. Reviewing and approving the mensuration techniques undertaken by imagery analysts under their supervision.

3. Insuring that personnel under their supervision are familiar with the IAS mensuration policy and that those who perform mensuration are competent in the use of IAS mensuration equipment.

IAS ADVISORY TEAM

A Mensuration Advisory Team, chaired by the Technical Advisor, IAS, and comprised of one representative from each IAS Division, has been established to provide advice and guidance on unusual mensuration problems.